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AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM



(THROUGH 31 DECEMBER 1967) S-2010/AP4A

Prepared Jointly by

The Central Intelligence Agency
and

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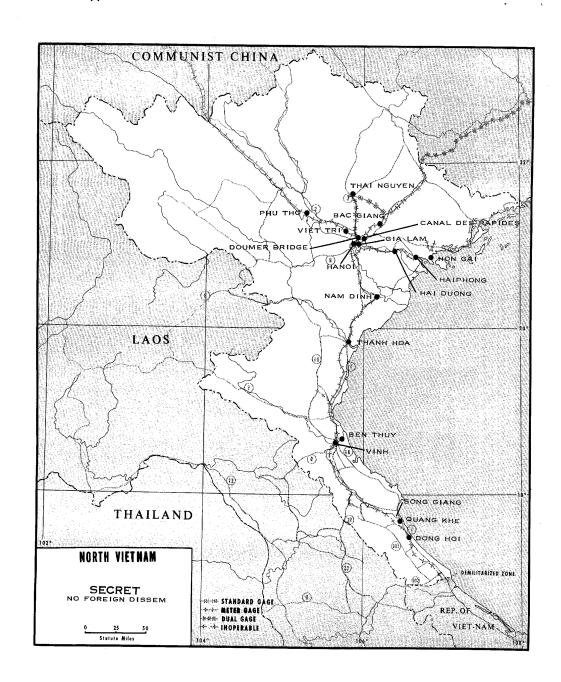
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AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM (THROUGH/31//DECEMBER/(1967))

FOREWORD

This report is prepared on a monthly basis at the request of the Secretary of Defense for an evaluation of certain effects of the ROLLING THUNDER program. The report covers three general areas of concern: Effects on Military Targets; Leadership and Public Reactions; and Effects on the NVN Economy. The discussion of political effects is limited to those developments within North Vietnam which relate to Hanoi's attitude toward continuing the war and the effects the ROLLING THUNDER attack has on civilian morale in North Vietnam.



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AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM THROUGH DECEMBER 1967

SUMMARY

- 1. (S/NFD) Air operations in December continued to be hampered by the northeast monsoon season which again caused attacks to be concentrated in the Panhandle area. Interdiction of the key Canal des Rapides and Doumer Bridges created serious disruptions to the movement and distribution of supplies. Damage to the Doumer Bridge was extensive and will require more time and effort to restore than was needed in the past, but the Canal des Rapides Bridge is again being used for rail and truck traffic.
- 2. (S/NFD) The North Vietnamese continue to take advantage of the reduced level of attacks to make repairs to key segments of the transport system. Extensive efforts were noted to restore damaged bridges south of Hanoi, possibly in preparation for movement of supplies during the Christmas and New Year's truces. During these two periods the anticipated surge in logistic activity occurred. A very sharp increase in traffic sighted, particularly on the highways, enabled large quantities of supplies to be moved during the standdowns. These resupply efforts will improve the North Vietnamese logistic posture in the DMZ area, the Laos Panhandle, and eventually South Vietnam.
- 3. (S/NFD) North Vietnam has restored some industrial facilities to partial operation. Five of the major electric generating plants are operating at a fraction of normal capacity, and repair activities were

noted at two others. Currently, 70 per cent of North Vietnam's electric generating capacity is believed to be inoperative, compared with a high of more than 80 per cent during the summer months. Parts of the Viet Tri chemical complex and the Phu Tho fertilizer plant are in production. Food and POL imports were well above monthly averages. North Vietnamese food imports for the year were approximately 450,000 metric tons, an amount required to offset domestic food production shortfalls during the fall of 1966 and during 1967.

- 4. (S/NFD) There was some indication that Hanoi is changing its position concerning negotiations; however, this may be a ploy to encourage termination of the bombing.
- 5. (S/NFD) Cumulative effects of the airstrikes have clearly degraded North Vietnam's capability for sustained large-scale conventional military operations against South Vietnam. Cumulative measurable damage through December is estimated at \$414 million. There are, of course, many other losses to the regime that cannot be meaningfully quantified.

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Effects on Military Targets

- 1. (S/NFD) Air operations continued to be limited by the northeast monsoon season. Twelve thousand sorties were flown in December, about the same level of activity carried out in November. Major efforts were again directed against the transportation system, with attacks against key bridges, rail yards, transshipment points, transport equipment, and truck parks causing the most disruption. Airfields, SAM sites, AAA installations, and storage areas were also struck.
- 2. (S/NFD) The capability of the North Vietnamese transport system in the Hanoi area decreased with the interdiction of the key bridges over the Canal des Rapides and the Red River on 14 and 15 December. Aerial photographs of 3 January indicate that approximately 800 feet of the Doumer Bridge on the Red River remains down. The Canal des Rapides Bridge has been restored for truck and rail traffic. These two bridges have been interdicted three times and restored on each occasion as rapidly as possible. The recent damage to the Doumer Bridge, however, is so extensive that restoration of highway and rail traffic will require more time and effort than was needed in the past. Only a few strikes were conducted against the remainder of the Dong Dang line.
- 3. (S/NFD) Two new combination ferry-pontoon bypasses, one and one-half nautical miles north and south of the Doumer Bridge, are nearing completion. The northern bypass, when completed, will

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extend across both the Red River and the Canal des Rapides. Photography of a rail-to-water transshipment point near the Doumer Bridge revealed a unique arrangement to allow direct offloading of rail cars to barges by means of eight chute/conveyor rigs adjacent to the river bank.

- 4. (S/NFD) Rail traffic from the port area of Haiphong continued to be disrupted because of the interdiction of the Haiphong Railroad/ Highway Bridge. Photography of early January, which revealed more rolling stock in the port area than had been previously noted, indicates that rail cars were being moved into Haiphong over the rail/pontoon bypass bridge. This is the first indication of probable rail shipments from the port area since late September, when the Haiphong Railroad/ Highway Bridge was interdicted.
- 5. (S/NFD) The low level of airstrikes during December allowed some restoration of damaged bridges on the Vinh line and may have permitted through service for part of the month. Reported losses of railroad rolling stock remained at low levels.
- 6. (S/NFD) The number of attack sorties against the highway system was comparable to the November level, with most operations being concentrated in the Panhandle region. Major highway bridges serving Haiphong remained interdicted although construction activity was observed on the Haiphong Highway Bridge over the Ha Ly Canal, the Kien An Highway Bridge, and on the Haiphong Railroad/Highway Bridge over the the Song Tram Bac. At least 10 highway ferries and pontoon bridges

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bypass the interdicted structures, allowing truck movement of supplies out of the port area. Localized flooding in the southern area along Route 1A, combined with the concentration of air activity against road traffic and highway facilities, resulted in some denial of through traffic from Dong Hoi to the DMZ. Extensive repair activities were noted prior to the Christmas truce, probably in preparation for the intensified resupply effort which was observed during the standdown.

- 7. (S/NFD) The number of vehicles detected in December increased over last month, but was substantially below the high total reported during September. The increase over November is due largely to the activity associated with the Christmas pause. The majority of this month's truck sightings was detected at night, as the greatest amount of transport activity continues to take place during darkness. A good portion of the trucks sighted by day was in truck parks, particularly in the southern Panhandle. Truck attrition for December was double that of November, with pilots reporting about 300 trucks destroyed or damaged -- a large increase over the December 1966 total.
- 8. (S/NFD) During the Christmas and New Year's truces, emphasis was on the use of trucks to move supplies. During the 24-hour Christmas truce, as many as 600 trucks were observed in photography between Thanh Hoa and Dong Hoi, with Routes 1A and 82 most heavily used. Most of the

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trucks were heading south, with the major concentrations noted near Vinh and Quang Khe. Shortly after the truce, pilots on armed reconnaissance sighted and attacked two southbound convoys totaling 250 trucks. One convoy, of 150 trucks, was located south of Thanh Hoa and the other was near Ha Tinh. About 100 trucks were destroyed or damaged by air strikes shortly after the truce ended. Watercraft activity was apparently confined to the Quang Khe area, where about 140 sampans were used to carry supplies across the Song Giang.

9. (S/NFD) During the 36-hour New Year's truce, poor weather restricted aerial reconnaissance over North Vietnam and prevented a complete assessment of logistic activity. Nevertheless, a total of 700 trucks was sighted in the limited photography obtained during 31 December and 1 January. In addition, infrared photography and radar surveillance over coastal sectors, not generally covered in the daytime photography, indicated the presence of an estimated 300 to 500 trucks in the area between Phu Dien Chau and Ron on the night of 31 December. Most of these vehicles were moving south and were concentrated south of Vinh. Total sightings appear to have been in the magnitude of 1,000 to 1,200 trucks. Nevertheless, an indeterminate amount of these sightings includes duplication, and a precise total cannot be provided. Of the 700 trucks noted above, more than 100 were heading south along a 30-mile segment of Route 1A between Ron and Dong Hoi, with the majority at Quang Khe. Watercraft activity

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was also noted near Quang Khe, where a concentration of 100 small craft was moving supplies across the Song Giang.

- 10. (S/NFD) Poor weather and reduced strike activity resulted in the lowest number of attacks against watercraft reported since March 1966. Most of the strikes were against dispersed watercraft south of $20^{\circ}30^{\circ}N$.
- 11. (S/NFD) There is evidence that the 13,000 MK-36 destructors implanted since 20 June 1967 have, in certain instances, effectively inhibited traffic movement. The evidence, however, is generally fragmentary and circumstantial. For example, photographs indicate that the MK-36 denied use of a ferry site at Ben Thuy for a period of almost two months, although over-the-beach transshipment operations were noted in the area. At least 22 of the 29 destructors seeded near Hanoi Railroad Ferry No. 1 have detonated, destroying at least three pieces of rolling stock. Photographs also showed a destroyed tug and two destroyed barges in a seeded area in Haiphong -- apparent casualties of the MK-36. Press reports from Hanoi have made reference to localized food shortages caused by the mining of inland waterways, of rescue work being hampered, and traffic movement being disrupted. North Vietnamese fishermen have also reported the sinking of junks and barges by delayedaction bombs. Indications also exist, however, that performance of the MK-36 has been somewhat inconsistent and that North Vietnam continues to use the LOC's despite employment of this weapon. Only rudimentary

efforts to counter the MK-36 destructors have been noted to date. Although the MK-36 has advantages over standard ordnance for interrupting moving traffic, the North Vietnamese transport system is too flexible, alternate routes too numerous, and transshipment too easy to expect dramatic results.

- 12. (S/NFD) MIG employment by the North Vietnamese air defense system was characterized by aggressive air maneuvers supported by relatively sophisticated ground-to-air coordination and control. SAM activity decreased, as did its effectiveness. Throughout the month a total of 17 US aircraft were destroyed. MIG's accounted for three losses and SAM's for two. The remaining losses were due to AAA or unknown causes.
- 13. (S/NFD) The North Vietnamese Air Force continued to operate with a minimum number of aircraft -- 10 to 12 MIG 21's and six to eight MIG 17's. Enemy pilots are attempting to achieve increased tactical advantages by attacking US formations with MIG 21's and MIG 17's simultaneously. The North Vietnamese continue to be successful in selecting for attack strike units that do not have combat air patrol (CAP) fighter support immediately available. Increased US successes have occurred in engagements with the slower MIG 17 aircraft. A total of three confirmed and two probable MIG 17's was destroyed.
- 14. (S/NFD) Black Shield photography of 15 and 16 December provided near-simultaneous readout on more than 200 known missile

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sites which are capable of supporting missile equipment. Nineteen of the sites were occupied. Analysis of electronic intelligence indicated that an additional five battalions had been active but were not detected on sites at the time of the photography. These 24 units plus those estimated in maintenance or having been damaged by airstrikes would support current estimates that there are 25 to 30 battalions in North Vietnam. About 60 per cent of the SAM battalions are deployed at hard sites (revetted), while 40 per cent are in a continuous mobile configuration and are normally deployed on field sites. Static units are assigned to defend key target areas such as Hanoi and Haiphong, while the mobile units "shoot and move" and probably have the mission of interferring with strike forces en route to targets.

15. (S/NFD) The disruptions of the vital lines of communication into Hanoi from the north and out of Haiphong continue to make the distribution of military and economic supplies more time-consuming and costly by forcing the use of less efficient alternates. Poor flying conditions and the bombing pauses afforded the North Vietnamese the opportunity to repair LOC's in the south, and allowed them to move significant tonnages to the DMZ, Laos, and eventually to South Vietnam. Because the logistic requirements are modest, the North Vietnamese continue to demonstrate the capability to support activities in South Vietnam at present or increased combat levels. The cumulative effects of the strikes have degraded North Vietnam's

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capability for sustained large-scale conventional military operations
against South Vietnam.

Leadership and Public Reaction

16. (S/NFD) North Vietnamese Foreign Minister Nguyen Duy Trinh on 30 December reaffirmed the government's apparent determination to continue the war, but possibly added a new element to its longstanding campaign to get the bombings stopped. Speaking to a visiting Mongolian Delegation, Trinh stated that his government "will hold talks" with the United States if the bombing "and all other acts of war against the DRV" are stopped unconditionally. Hanoi's previous position was that there "could be talks" if the United States took these actions. The Foreign Minister avoided spelling out the timing or content of any talks but asserted that the basis for solving the Vietnam problem remained Hanoi's Four Points and the political program of the National Liberation Front.

17. (S/NFD)

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have provided a picture of the difficult

life in several localities outside of the major cities. They reported shortages of food and clothing. Some of the refugees stated that evacuees from the cities received little or no government assistance on arriving in the countryside and encountered local hostility. Most reported widespread discontent with the war, and at times with the government, but none cited any instances of open resistance to the regime or its policies.

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- 18. (S/NFD) Recent official commentary from Hanoi reviewing the war situation during the past year has attempted to discount the effects of the bombings. Propaganda statements have claimed that the Communists have made marked military progress and have achieved significant advances in the economic and cultural fields during 1967. Although there are periodic reports of declining morale, no open resistance to the regime has been noted, nor has there been any apparent pressure to force Hanoi to alter its current policies. In a Communist system, however, the significance of outward indications of declining morale is difficult if not impossible to evaluate. Effects on the Economy
- Effects on the Beonomy
- 19. (S/NFD) There have been no airstrikes against industrial facilities since mid-November. Modern industrial facilities remain generally inoperative, although production at several of the electric power and manufacturing plants was partially restored by the end of the year.
- 20. (S/NFD) About 70 per cent of North Vietnam's national electric generating capacity remains out of operation, compared with a high of 80 per cent during June-October 1967. Five of the nine powerplants in the main power network -- Hon Gai, Nam Dinh, Viet Tri, Bac Giang, and Hanoi -- are now in partial operation. The Hanoi and Bac Giang plants are operating at about 50 per cent of capacity and the remaining plants at up to one-third. The restored capacity of

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these five plants is about 20 per cent of the main network's prestrike capacity. Photography indicates repair activity in progress on the powerplants at Uong Bi and Thai Nguyen.

- 21. (S/NFD) The Phu Tho fertilizer plant has also been restored for at least partial operation, according to photographs of 15 December. At the Viet Tri chemical complex, the sugar refinery and the alcohol plant -- only a small part of the total complex -- probably have resumed production. Minor construction activity has been observed at the Bac Giang chemical plant. There is no evidence of reconstruction or production at the Haiphong Cement Plant or the Thai Nguyen Iron and Steel Combine.
- 22. (S/NFD) Identified petroleum imports increased to about 28,000 metric tons during December and stocks on hand at the end of the year were 65,000 to 70,000 metric tons, equivalent to a 95 to 100 days' supply at the current consumption rate.
- 23. (S/NFD) The 1967 rice crop is believed to be about 500,000 metric tons of paddy (325,000 tons of polished rice) below normal levels. Nearly 450,000 metric tons of bulk foods were imported in 1967 to offset the below-normal harvests in the fall of 1966 and in 1967.
- 24. (S/NFD) Identified seaborne imports in December were about 128,000 metric tons -- 16,000 metric tons more than the monthly average for 1967. Imports of bulk foods (46,000 metric tons) and

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petroleum (28,000 metric tons) were well above the monthly averages for these commodities. Fertilizer imports resumed after a two-month hiatus. Although the imports of miscellaneous and general cargo dropped to 44,000 metric tons, these were still slightly over the 1967 monthly average.

- 25. (S/NFD) Identified seaborne exports in December totaled 41,000 metric tons, the highest volume since June but still below the monthly average for the year. Coal exports increased sharply in December to 35,000 metric tons. This increase came mostly from Cam Pha, indicating that there has been some repair of coal processing facilities. There continued to be no identified exports of apatite, cement, or pig iron.
- 26. (S/NFD) A combination of factors has reduced ship congestion at Haiphong since about midyear. Among these were a reduction of ship arrivals and cargoes and increased use of lighters in discharging cargoes. Average layover time for freighters departing from Haiphong declined again in December to 15 days. The amount of cargo stored in the open near the wharves apparently remains about the same as in early October.
- 27. (S/NFD) In mid-December the North Vietnamese Council of Ministers, under the Chairmanship of Premier Pham Van Dong, adopted a State Plan and Budget for 1968. The previous plan was for two years, 1966-67. It appears that the regime has gone to a one-year planning period to accommodate to changing war conditions.

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28. (S/NFD) Cumulative measurable damage attributable to the Rolling Thunder Program through 1967 is estimated at \$414 million (see Tab B). In addition to the measurable losses, there continue to be many other losses to both the economy and the military establishment that cannot be assigned meaningful values.

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RESULTS OF STRIKES ON NVN TARGETS a/THRU 31 DECEMBER 1967

TABLE 360

Total Targets <u>c/</u>		Targets Struck						
National				<u>d</u> /	<u>e</u> /	<u>b</u> /	Destro	yed or
Capacity .	Tar	geted			No. of	Strike		ye because
(X 1000)	No	%	No	%	Attacks	Sorties	of air	strikes
443 men	65	41.08	58_	35.9	404			
112.6MT	18	100	18	100	118			
208MT	13	78.1	13	96.4	91	756		
10550SqFt	29	42.48	26	31.2				
192KW	20	92.1	15	85.8				
8.2ST/DY	9	97	7	48	30			
49.7	4	78	3	54	. 91			
	3	88	2	68	66	58	27.1	
1MT	1	100	1					
300MT(PIG)	1	100	1	100	24			
600MT	1	100	1_	100	1	57	100	
l Targets						<u>% -</u>	of those	targeted
23	12%	ric	11*	* 83	116	1685	37.1	
15	5		4	57	30	295	30.4	
1561	61		59		597	5647	75.0	
55	5		2		2	15	20	
210	5		5		80	459	62.5	
221			58		12	388		
94	8		2	38.6	2	10	38.6	
160			11		7	44		
	National Capacity (X 1000) 443 men 112.6MT 208MT 10550SqFt 192KW 8.2ST/DY 49.7 MT 300MT(PIG) 600MT Targets 23 15 1561 55 210 221	National J Capacity Tar (X 1000) No 443 men 65 112.6MT 18 208MT 13 10550SqFt 29 192KW 20 8.2ST/DY 9 49.7 4 3 IMT 1 300MT(PIG) 1 600MT 1 Targets 23 127 15 5 1561 61 55 5 210 5 221 94 8	Capacity (X 1000) No % 443 men 65 41.08 112.6MT 18 100 208MT 13 78.1 10550SqFt 29 42.48 192KW 20 92.1 8.2ST/DY 9 97 49.7 4 78 3 88 IMT 1 100 300MT(PIG) 1 100 600MT 1 100 Targets 23 12** 15 5 1561 61 55 210 5 221 94 8	Total Targets c/ Sometimes of the color of t	Total Targets C/ Struck National JCS d/ Capacity Targeted (X 1000) No % No % 443 men 65 41.08 58 35.9 112.6MT 18 100 18 100 208MT 13 78.1 13 96.4 10550SqFt 29 42.48 26 31.2 192KW 20 92.1 15 85.8 8.2ST/DY 9 97 7 48 49.7 4 78 3 54 49.7 4 78 3 54 2 68 1MT 1 100 1 100 300MT(PIG) 1 100 1 100 600MT 1 100 1 100 Targets 23 12** 11** 83 15 5 4 57 1561 61 59 55 5 2 210 5 5 5 221 58 94 8 2 38.6	Total Targets c/ Struck National Capacity Targeted (X 1000) No % No of Attacks 443 men 65 41.08 58 35.9 404 112.6MT 18 100 18 100 118 112.6MT 13 78.1 13 96.4 91 91 10550SqFt 29 42.48 26 31.2 92 92.1 15 85.8 111 8.2ST/DY 9 97 7 48 30 30 49.7 4 78 3 54 91 30 49.7 4 78 3 54 91 388 2 68 6 6 IMT 1 100 1 100 20 20 300MT(PIG) 1 100 1 100 24 24 24 26 6 6 1 1 100 1 100 24 1 1 100 24 1 <td< td=""><td>Total Targets C/ Struck National Capacity Targeted (X 1000) No. of X No. of X Strike 443 men 65 41.08 58 35.9 404 3208 35.9 404 3208 3208 112.6MT 18 100 18 100 118 1398 118 1398 208MT 13 78.1 13 96.4 91 756 756 10550SqFt 29 42.48 26 31.2 92 925 92.1 15 85.8 111 848 8.2ST/DY 9 97 7 48 30 292 292 49.7 4 78 3 54 91 663 3 54 91 663 663 58 1MT 1 100 1 100 20 126 300MT(PIG) 1 100 1 100 24 281 281 600MT 1 100 1 100 1 57 55 4 57 30 295 1561 61 59 59 597 5647 55 2 2 2 15 210 5 5 5 80 459 221 58 12 388 94 8 2 38.6 2 10</td><td>Total Targets Struck ½ of National Destroy Capacity Targeted (X 1000) No. of X Attacks Sorties of air 443 men 65 41.08 58 35.9 404 3208 26.86 35.9 404 3208 26.86 112.6MT 18 100 18 100 118 1398 77.0 208MT 13 78.1 13 96.4 91 756 70.0 10550SqFt 29 42.48 26 31.2 92 925 18.98 192KW 20 92.1 15 85.8 111 848 81.6 8.2ST/DY 9 97 7 48 30 292 13.6 35.4 91 663 10.6 49.7 4 78 3 54 91 663 10.6 388 2 68 6 58 27.1 1MT 1 100 1 100 20 126 100 100 20 126 100 300MT(PIG) 1 100 1 100 24 281 100 20 126 100 400MT 1 100 1 100 24 281 100 20 30.4 281 100 55 5 2 2 2 15 20 215 20 210 5 5 5 80 459 62.5 38.6 2 10 38.6 94 8 2 38.6 2 10 38.6</td></td<>	Total Targets C/ Struck National Capacity Targeted (X 1000) No. of X No. of X Strike 443 men 65 41.08 58 35.9 404 3208 35.9 404 3208 3208 112.6MT 18 100 18 100 118 1398 118 1398 208MT 13 78.1 13 96.4 91 756 756 10550SqFt 29 42.48 26 31.2 92 925 92.1 15 85.8 111 848 8.2ST/DY 9 97 7 48 30 292 292 49.7 4 78 3 54 91 663 3 54 91 663 663 58 1MT 1 100 1 100 20 126 300MT(PIG) 1 100 1 100 24 281 281 600MT 1 100 1 100 1 57 55 4 57 30 295 1561 61 59 59 597 5647 55 2 2 2 15 210 5 5 5 80 459 221 58 12 388 94 8 2 38.6 2 10	Total Targets Struck ½ of National Destroy Capacity Targeted (X 1000) No. of X Attacks Sorties of air 443 men 65 41.08 58 35.9 404 3208 26.86 35.9 404 3208 26.86 112.6MT 18 100 18 100 118 1398 77.0 208MT 13 78.1 13 96.4 91 756 70.0 10550SqFt 29 42.48 26 31.2 92 925 18.98 192KW 20 92.1 15 85.8 111 848 81.6 8.2ST/DY 9 97 7 48 30 292 13.6 35.4 91 663 10.6 49.7 4 78 3 54 91 663 10.6 388 2 68 6 58 27.1 1MT 1 100 1 100 20 126 100 100 20 126 100 300MT(PIG) 1 100 1 100 24 281 100 20 126 100 400MT 1 100 1 100 24 281 100 20 30.4 281 100 55 5 2 2 2 15 20 215 20 210 5 5 5 80 459 62.5 38.6 2 10 38.6 94 8 2 38.6 2 10 38.6

* JCS targets only; does not include dispersed storage.

Total Sorties: 15,968

** Includes non-JCS numbered Hoa Lac Airfield.

Lac	Results f			
Armed Recce Sorties	Destroyed	Damaged		
188,186	Vessels 9,636 Vehicles 5,981 RR Stock 1,856	17,745 5,171 3,116		

- a/ Assessments are based on best information received, will be refined as more accurate information becomes available.
- $\underline{b}/$ Strike plus flak suppression sorties. Some applied to multiple targets; in this summary assigned to principal target.
- c/ These columns are not additive, since the number of installations, both targeted and struck in some cases, apply to more than one category of targets (i.e., barracks, supply and ammo depots).
- $\underline{d}/$ Percentages of national capacity where appropriate.
- $\overline{\underline{e}}/$ Also numerous attacks during armed recce and other missions.
- $\frac{f}{A}$ lso numerous installations, AA sites, bridges, etc., attacked and road and rail cuts made.

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Value of Economic and Military Damage Attributed to the ROLLING THUNDER Program 1965 Through December 1967

Economic Facilities and	Equipment	Military Facilities and	Equipment
Direct Losses M	illion US \$	Direct Losses	Million US \$
Railroad/Highway Bridges Transportation Equipment	33.4 <u>a/b</u> / 75.5	Barracks Ammunition Depots	30.0 <u>a</u> / 5.3 <u>a</u> /
Electric Powerplants Petroleum Manufacturing Facilities	32.9 7.5 18.1	Motor Vehicle Depots and Supply Area Depots Airfields	11.0 <u>a</u> / 1.7 <u>a</u> /
Railroad Yards and Shops Maritime Ports and Shipyard Miscellaneous Armed	6.3 <u>a</u> / s 2.6 <u>a</u> /	Radar and Communications Sites · SAM Sites	2.9 <u>a</u> / 8.5 <u>a</u> /
Reconnaissance	2.3	Naval Bases Aircraft	1.9 44.2
SUBTOTAL, Direct Losses	178.6	Naval Craft Miscellaneous Armed	4.8
Indirect Losses		Reconnaissance	19.5
Exports Agriculture <u>c</u> /	35.1 60.5	TOTAL, Direct Losses	129.8
Fishing	9.5	<u>TOTAL</u> MILLION US \$	
SUBTOTAL, Indirect Losses	105.1	Economic 284	
TOTAL, Direct and Indirect	283.7	Military <u>130</u> TOTAL <u>414</u> <u>d</u> /	

<u>a</u>/ Estimate is incomplete because of inadequate post-strike photography.

b/ Of the total, \$6.3 million is estimated to have been expended to date on the the repair of damaged and destroyed bridges and \$27.1 million is estimated for complete restoration in the future of bridges damaged or destroyed. In addition, \$1.5 million would be required to make temporary repairs to presently unrepaired bridges.

c/ It should be noted that losses of agricultural crops are arbitrarily attributed entirely to the indirect effects of the bombing. An unknown part of these losses is in fact due to weather and other natural causes.

<u>d</u>/ Excluding the cost of trucks destroyed and damaged in Laos and economic and military facilities and equipment destroyed and damaged by US naval operations along the coast of southern North Vietnam.

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AIR FORCE: CHIEF OF STAFF ACS,I/USAF AFNINDE AFNIEBB AFISI (Spec Investigation) AUL (Air Univ Library)	2 Cys 1 Cy 8 Cys 1 Cy 1 Cy 1 Cy
MARINE CORPS: COMMANDANT G-2	1 Cy 1 Cy
CINCPACAF CINCPACAF CINCUSARPAC CINCPACFLIT COMUSMACV 7AF COMSEVENTHFLIT COMATKCARSTRIKEFORSEVENTHFLIT (CTF 77) CINCLANT CINCSTRIKE CINCSAC SAC 544 CINCTAC AFSTRIKE CONTIC CINCALCOM CINCEUR CINCALCOM CINCEUR CINCUSAREE CINCUSAREE CINCUSAREE CINCUSAREE CINCUSAREE CINCUSAREE CINCUSAREE CINCUSAREE CINCUSAFE CINCUSAVEUR CINCONAD CIA	2 Cys 10 Cys 1 Cy 1 Cy 2 Cys 2 Cys 1 Cy
ARMED FORCES STAFF COLLEGE DIA	1 Cy 35 Cys

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